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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/528,759	03/22/2005	Munetaka Tsuda	1141/74098	3717

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EXAMINER

VARGAS, DIXOMARA

ART UNIT	PAPER NUMBER
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2859

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/528,759

Applicant(s)

TSUDA ET AL.

Examiner

Dixomara Vargas

Art Unit

2859

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 02 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 4,13,21-23 and 34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-12,14-19,24-33 and 35-37 is/are rejected.
- 7) ☒ Claim(s) 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 5-12, 14-19, 24-33 and 35-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Tsuda (US 6,748,749 B2)
4. The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

With respect to claims 1, 8, and 15, Tsuda discloses a magnetic resonance imaging apparatus comprising: a super-conducting magnet (Figure 2, #210-#211) including a super-

Art Unit: 2859

conducting coil circuit having a super-conducting coil and a permanent current switch for controlling a permanent current flowing through the super-conducting coil (Figure 3, #303) and a heater element for controlling demagnetization of the super-conducting coil (Figure 1, #3 and #5) or a sensor element for measuring amount of liquid helium which are accommodated in a helium vessel (Column 5, lines 1-6, Figure 1, #23), a control circuit or a monitor circuit which is electrically connected to the heater element and the sensor element and disposed at the outside of the helium vessel (#9, #10 and #22), a gradient magnetic field generating means for generating a gradient magnetic field (#3 and #4) and providing the same to a static magnetic field generated by the super-conducting magnet and a high frequency magnetic field generating means for generating a high frequency magnetic field to be applied to a subject (Figure 1, #22) characterized, in that the magnetic resonance imaging apparatus further comprises means for interrupting formation of a closed loop circuit across the control circuit or the monitor circuit and the super-conducting coil circuit (Figure 1, #15).

5. With respect to claim 2, Tsuda discloses the interrupting means is a filter circuit unit connected between the heater element and the sensor element and the control circuit or the monitor circuit (Figure 1, #15).

6. With respect to claims 3, 18 and 32, Tsuda discloses the filter circuit unit includes an outer casing and a filter element accommodated in the outer casing (Figure 1, #16) and a conductor connected to the outer casing forms another closed loop circuit, which bypasses the aforesaid closed loop circuit, together with the control circuit or the monitor circuit through the helium vessel (as seen on Figure 1).

Art Unit: 2859

7. With respect to claims 5, 27 and 37, Tsuda discloses the filter element in the filter circuit unit at least cuts off signals having driving frequencies of the gradient magnetic field generating means and frequency band of the high frequency magnetic field (Column 6, lines 25-39).

8. With respect to claim 6, Tsuda discloses the super-conducting magnet is constituted by a pair of super-conducting coils which are disposed so as to sandwich the measurement space where the subject is laid (Figure 2, #210 and #211).

9. With respect to claims 7 and 30, Tsuda discloses the gradient magnetic field generating means and the high frequency magnetic field generating means are respectively constituted by flat plate shaped coils which are respectively disposed so as sandwich the measurement space where the subject is laid (Column 4, lines 14-22; Figure 1, #3 and #5).

10. With respect to claims 10 and 36, see rejection of claims 1, 6 and 7 above.

11. With respect to claim 11, Tsuda discloses the means for preventing flowing in of the high frequency current is an electrical circuit for preventing electro-magnetic coupling between the super-conducting coil circuit and the control circuit or the monitor circuit (Figure 1, #15).

12. With respect to claim 12, Tsuda discloses the means for preventing flowing in of the high frequency current is a filter circuit for cutting off high frequencies which is provided between the control element or the measurement element and the control circuit or the monitor circuit at the outside of the cryostats (Figure 1, #15).

13. With respect to claims 14, 28 and 35, Tsuda discloses the means for preventing flowing in of the high frequency current bypasses the induced high frequency current through an outer wall of the grounded cryostats (Figure 1).

14. With respect to claim 16, Tsuda discloses the noise current interrupting means is disposed on an outer wall surface of the super-conducting magnet at a portion where a connecting cable connecting the electrical circuit and the electrical element passes through (as seen on Figure 1, filter #15).

15. With respect to claim 17, Tsuda discloses the noise current interrupting means is a filter circuit unit connected between the electrical circuit and the electrical element (Figure 1, filter #15).

16. With respect to claim 19, Tsuda discloses the filter element passes electrical signals generated by the electrical element and interrupts noises at least of driving frequencies of the gradient magnetic field generating means and of a frequency band of the high frequency magnetic field (Column 4, lines 23-34).

17. With respect to claim 24, Tsuda discloses an electrical element is a heater element for controlling the permanent current switch and the electrical circuit is a control circuit for controlling the heater element (Column 6, lines 25-62).

18. With respect to claim 25, Tsuda discloses the electrical element is a sensor element for measuring the amount of liquid helium and the electrical circuit is a monitor for monitoring electrical signals from the sensor element (Column 6, lines 25-62; Figure 4, #215, #216 and #23).

19. With respect to claim 26, Tsuda discloses the noise current interrupting means interrupts formation of an electrically closed loop between the electrical circuit and the superconducting coil circuit (Figure 1, #15).

Art Unit: 2859

20. With respect to claim 29, Tsuda discloses the super conducting coil of the superconducting magnet is a pair of coils disposed in a facing manner while sandwiching a measurement space where the subject is laid (as seen on Figure 1 with one coil and another coil in a bottom).

21. With respect to claims 31 and 33, see rejection of claims 1, 3, 5, 7, 11, 12 and 14 above.

Allowable Subject Matter

22. Claim 20 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

23. The following is a statement of reasons for the indication of allowable subject matter:

a. With respect to claim 20, the claim has been found allowable over the prior art of record because the prior art of record fails to teach or fairly suggest a MRI apparatus comprising a filter element is a current through type filter of π type filter in which an inductor element is surrounded by the outer casing of a metal cylinder and a through type capacitor is constituted by input and output terminals thereof in combination with the remaining limitations of the claims 15 and 17-19 above.

Response to Arguments

24. Applicant's arguments filed 01/02/07 have been fully considered but they are not persuasive.

Art Unit: 2859

25. Applicant argues that Tsuda fails to teach or fairly suggest the loop being interrupted and that the filter circuit from Tsuda is different from the interrupting means from applicant as claimed for the following reasons: Applicant found through substantial investigation that a closed loop circuit is formed between on the one hand an external control circuit or an external monitor circuit to which, for example, sensor elements for measuring in-vessel environment (in particular, helium liquid level) and heater elements (for emergency demagnetization), and on the other hand the superconducting coupling circuit through electro-magnetic coupling, and that the electromagnetic coupling is sufficiently large such that when varying magnetic fluxes due to the gradient magnetic field and the high frequency magnetic field generated in association with the imaging operation in the MRI apparatus pass through the closed loop circuit, an induced current flows in the closed loop circuit (including the control circuit and the monitor circuit) to cause the circuit to erroneously operate and cause the super-conducting state of the super-conducting coil circuit to be broken.

26. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., how and with what the circuit is interrupted as explained above) are not recited in the rejected claim(s).

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In addition, if applicant means that the circuit loop is interrupted by other type of means, the applicant is reminded that the claim language fails to point out what are the interrupting means.

Art Unit: 2859

27. Applicant argues the following: “the interrupting means is for substantially interrupting the formation of the closed loop circuit (for example, 501 in Fig. 4) with the internal circuit of the cryostats and the connection cables, such as for the liquid helium measurement unit 121 and emergency demagnetizing unit 120. Thereby, as discussed on page 26 of the present application, a possible flowing-in of the current induced in association with the imaging operation of the MRI apparatus into the internal circuit is prevented and a stable operation of the super-conducting magnet can be ensured.

28. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., how and with what the circuit is interrupted as explained above) are not recited in the rejected claim(s).

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

29. Applicant argues that the invention of the current application and Tsuda is commonly assigned to Hitachi Medical Corporation. Therefore, 35 U.S.C. 103 (c) does not preclude patentability of the claims of the current application.

30. The examiner disagrees with applicant's argument since applicant fails to disclose that Tsuda and the current application was commonly own and assigned at the time the invention was made. In addition applicant is reminded that a 35 U.S.C. 102 rejection was applied and not a 35 U.S.C. 103 (c) rejection.

31. Applicant argues the following: Tsuda '749 does not teach or suggest (a) means for electro-magnetically shielding the super-conducting coil from the outside of the vessel (claim 8

Art Unit: 2859

of present application), Co) a terminal portion for connecting a heater element or a sensor element disposed in the vessel in an external circuit, and the terminal portion including means for forming a closed loop circuit including the external circuit, an outer wall of the vessel and a grounding point provided at the wall (claim 9 of present application), (c) means for preventing high frequency current induced by the gradient magnetic field coils or the high frequency magnetic field coils from flowing in from the control circuit or the monitor circuit to the super-conducting coil circuit (claim 10 of present application), (d) means for interrupting noise current generated based on tomographic image measurement of the subject and of which means is disposed outside the super-conducting magnet while being inserted between the electrical circuit and the electrical element (claim 15 of present application).

32. Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

Conclusion

33. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

Art Unit: 2859

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

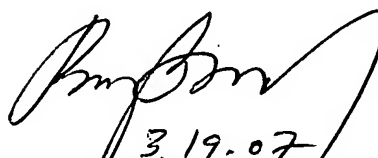
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dixomara Vargas whose telephone number is (571) 272-2252. The examiner can normally be reached on Monday to Thursday from 8:00 am. to 4:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on (571) 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Dixomara Vargas
Art Unit 2859
March 19, 2007


3.19.07
BRIJ SHRIVASTAV
PRIMARY EXAMINER